

What is claimed is:

1. A bipolar battery, comprising:

a bipolar electrode in which a positive electrode is provided on one surface of a collector, and a negative electrode is provided on the other surface of the collector;

a gel electrolyte sandwiched between the positive electrode and the negative electrode; and

a sealing layer which is provided between the collectors and surrounds a periphery of a single cell including the positive electrode, the negative electrode, and the gel electrolyte.

2. A bipolar battery according to claim 1,

wherein the sealing layer is made of first resin provided to be positioned on sides of the collectors and non-conductive second resin which is sandwiched by the first resin and has a higher melting point than that of the first resin, and

the collectors and the sealing layer are thermally welded at temperature between melting points of the first resin and the second resin.

3. A bipolar battery according to claim 2,

wherein an electrode stacked body is formed by stacking a plurality of the bipolar electrodes, the gel electrolytes and the sealing layers, and

the melting point of the first resin becomes higher as it is positioned further outside the electrode stacked body.

4. A bipolar battery according to claim 2,

wherein the first resin and the second resin are at least two resins, which have a higher melting point and a lower melting point than the temperature of the thermal welding, respectively, and which are selected from a group containing polypropylene, polyethylene, polyurethane, thermoplastic olefin rubber, polyamide-based resin, polytetrafluoroethylene, polyvinylidene fluoride, polystyrene and silicone rubber.

10

5. A bipolar battery according to claim 1,

wherein the positive electrode includes composite oxide of lithium and transition metal, and the negative electrode includes carbon or composite oxide of lithium and transition metal.

15

6. An assembled battery, comprising:

a plurality of bipolar battery connected in series and/or in parallel,

20

the bipolar battery, comprising:

a bipolar electrode in which a positive electrode is provided on one surface of a collector, and a negative electrode is provided on the other surface of the collector;

a gel electrolyte sandwiched between the positive electrode and the negative electrode; and

25

a sealing layer which is provided between the

collectors and surrounds a periphery of a single cell including the positive electrode, the negative electrode, and the gel electrolyte.

5     7     A vehicle, comprising  
an assembled battery including a plurality of bipolar  
battery connected in series and/or in parallel,  
the bipolar battery comprising:

10     a bipolar electrode in which a positive electrode  
is provided on one surface of a collector, and a negative  
electrode is provided on the other surface of the collector;

   a gel electrolyte sandwiched between the positive  
electrode and the negative electrode; and

15     a sealing layer which is provided between the  
collectors and surrounds a periphery of a single cell including  
the positive electrode, the negative electrode, and the gel  
electrolyte.

8.     A method for manufacturing a bipolar battery, comprising:  
20     forming a bipolar electrode in which a positive electrode  
is provided on one surface of a collector and a negative electrode  
is provided on the other surface of the collector;

   sandwiching a gel electrolyte between the positive  
electrode and the negative electrode, and simultaneously  
25     sandwiching a sealing layer between the collectors in a  
periphery of a single cell including the positive electrode,

the negative electrode, and the gel electrolyte; and

heating and pressurizing a portion of the sealing layers  
from sides of end collectors in a state where a plurality of  
the bipolar electrodes, the gel electrolytes and the sealing  
5 layers are stacked on each other.